

Second Draft (June 29, 2001)

**FACT SHEET/STAFF REPORT
FOR THE
COUNTY OF LOS ANGELES MUNICIPAL STORM WATER
NPDES PERMIT (CAS004001)**

Los Angeles Regional Water Quality Control Board

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Second Draft – FACT SHEET/STAFF REPORT

**State of California
California Regional Water Quality Control Board Los Angeles Region
National Pollutant Discharge Elimination System (NPDES)
Permit No. CAS004001, CI 6948
Regional Board Order No. 01-XXX**

I. PURPOSE

The purpose of this Fact Sheet/Staff Report is to give the Permittees and interested parties an overview of the proposed permit as well as to provide the technical basis for the permit requirements. Sections I through IV describe water quality problems from urban runoff, and permit conditions to address these problems. Sections V and VI contain discuss each major element of the Permittees' Storm Water Quality Management Plan (SQMP), and is meant to be used as a reference document during review of the permit.

II. INTRODUCTION - THE NEED TO REGULATE STORM WATER DISCHARGES

A. Impacts

The quality of storm water and urban runoff are fundamentally important to the health of the environment and the quality of life in Southern California. Polluted storm water runoff is a leading cause of water quality impairment in the Los Angeles Region. Storm water and urban runoff, during dry and wet weather, are often contaminated with pesticides, fertilizers, animal droppings, trash, food wastes, automotive byproducts, and many other toxic substances generated by our urban environment. Water that flows over streets, parking lots, construction sites, and industrial, commercial, residential, and municipal areas carries these untreated pollutants through the storm drain networks directly into the receiving waters of the Region. Several of the documented water quality impacts and increased public health risks from Municipal Separate Storm Sewer System (MS4) discharges that affect receiving waters nationwide and Los Angeles County and its coastline are listed below.

The **National Urban Runoff Program** (NURP) Study (USEPA 1983) showed that MS4 discharges draining from residential, commercial, and light industrial areas contain more than ten times the annual loading of total suspended solids. Although the NURP Study did not target industrial sites, the study suggested that runoff from industrial sites may have significantly higher contaminant levels than runoff from other urban land use sites. Several studies tend to support this suggestion, such as the Fresno, California NURP project, which showed that industrial areas had the poorest storm water quality of the four land-uses evaluated. The study also found that pollutant levels from illicit discharges were high enough to significantly degrade receiving water quality, and threaten aquatic life, wildlife, and human health.

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The **1998 National Water Quality Inventory** (305(b) Report)¹ showed that urban runoff/storm sewer discharges affect 11% of rivers, 12% of lakes, and 28% of estuaries. The report states that there was an increase in the impairment of ocean shoreline due to urban runoff/storm sewers from 55% in 1996 to 63% in 1998. The report notes that urban runoff and storm sewer discharges are the leading source of pollution and the main factor in the degradation of surface water quality² in California's coastal waters, rivers and streams.

The Natural Resources Defense Council (NRDC) 1999 Report, "**Stormwater Strategies, Community Responses to Runoff Pollution**"³ identifies two main causes of the storm water pollution problem in urban areas. Both components are directly related to development in urban and urbanizing areas:

1. Increased volume and velocity of surface runoff. There are three types of human-made impervious covers that increase the volume and velocity of runoff: (i) rooftop, (ii) transportation imperviousness, and (iii) non-porous (impervious) surfaces. As these impervious surfaces increase, infiltration will decrease, forcing more water to run off the surface, picking up speed and pollutants.
2. The concentration of pollutants in the runoff. Certain activities, such as those from industrial sites, are large contributors of pollutant concentrations to the storm water system.

The report also identified several activities causing storm water pollution from urban areas, practices of homeowners, businesses, and government agencies.

More recent studies conducted by **United States Geological Service** (USGS)⁴ confirms the link between urbanization and water quality impairments in urban watersheds due to contaminated storm water runoff.

Other studies proved a direct link between polluted urban runoff and adverse health effects to humans.⁵

B. Benefits of Permit Program Implementation

Implementation of the MS4 permit requirements should significantly reduce pollutants in urban storm water in a cost-effective manner. Implementation of Best Management Practices (BMPs) should also reduce pollutant discharges, and improve surface water quality. The expected benefits of implementing the minimum measures of an MS4 NPDES permit include:

¹ *Quality of Our Nation's Waters: Summary of the National Water Quality Inventory 1998 Report to Congress* - USEPA 841-S-00-001 - June 2000; *Water Quality Conditions in the United States: Profile from the 1998 National Water Quality Inventory Report to Congress* - USEPA 841-F-00-006 - June 2000

² *Quality of Our Nation's Waters: Summary of the National Water Quality Inventory 1998 Report to Congress*, Chapter 12 State and Territory Summaries, California., pp. 282-83: 1998.

³ *Clean Water & Oceans: Water Pollution: In Depth Report Stormwater Strategies, Community Responses to Runoff Pollution*. Natural Resources Defense Council (NRDC), 1999.

⁴ *Water Quality in the Puget Sound Basin, Washington and British Columbia, 1996-98*, Circular 1216 - USGS 2000; *Water Quality in the Long Island-New Jersey Coastal Drainages, New Jersey and New York, 1996-98*, Circular 1201 - USGS 2000

⁵ *An Epidemiological Study Of Possible Adverse Health Effects Of Swimming In Santa Monica Bay* - Haile, R. W. et al, Santa Monica Bay Restoration Project, 1996

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- **Enhanced Aesthetic Value:** Storm water affects the appearance and quality of a water body, and the desirability of working, living, traveling, or owning property near that water body. Reducing storm water pollution will increase benefits as these water bodies recover and become more desirable.
- **Enhanced Opportunities for Boating:** reducing sediment and other pollutants, and increasing water clarity, which enhances the boating experience for users, offer additional benefits.
- **Enhanced Commercial Fishing:** Important because commercial fisheries are a significant part of the nation's economy, and 28% of the estuaries in the 305(b) Report were impacted by storm water/urban runoff.
- **Enhanced Recreational and Subsistence Fishing:** Pollutants in storm water can eliminate or decrease the numbers, or size, of sport fish and shell fish in receiving waters.
- **Reduced Flood Damage:** Storm water runoff controls may mitigate flood damage by addressing problems due to the diversion of runoff, insufficient storage capacity, and reduced channel capacity from sedimentation.
- **Reduced Illness from Consuming Contaminated Seafood:** Storm water controls may reduce the presence of pathogens in seafood caught by commercial or recreational anglers.
- **Reduced Illness from Swimming in Contaminated Water:** Epidemiological studies indicate that swimmers in water contaminated by storm water runoff are more likely to experience illness than those who swim farther away from a storm water outfall.
- **Enhanced Opportunities for Non-contact Recreation:** Storm water controls reduce turbidity, odors, floating trash, and other pollutants, which then allow waters to be used as focal point for recreation, and enhance the experience of the users.
- **Drinking Water Benefits:** Pollutants from storm water runoff, such as solids, toxic pollutants, and bacteria may pose additional costs for treatment, or render the water unusable for drinking.
- **Water Storage Benefits:** Storm water is a major source of impairment for reservoirs. The heavy load of solids deposited by storm water runoff can lead to rapid sedimentation of reservoirs and the loss of needed water storage capacity.¹

III. STATUTORY AND REGULATORY HISTORY OF THE STORM WATER PROGRAM

Over the past 29 years, water pollution control efforts have focused primarily on certain process water discharges from facilities such as factories and sewage treatment plants, with less emphasis on diffuse sources. The 1972 amendments to the federal Clean Water Act (CWA) prohibit the discharge of any pollutant to waters from a point source, unless a NPDES permit authorizes the discharge. Because the focus on reducing pollutants was centered on industrial and sewage treatment discharges, Congress amended the CWA in 1987, requiring the USEPA to create phased NPDES requirements for storm water discharges.

In response to the 1987 Amendments to the CWA, EPA developed Phase I of the NPDES Storm Water Program in 1990. Phase I requires NPDES permits for storm water discharges from: (i) "medium" and "large" MS4s generally serving, or located in incorporated places or counties with, populations of 100,000 or more people; and (ii) eleven categories of industrial activity, one of which is construction activity that disturbs five acres or greater of land.

¹Report to Congress on Phase II Storm Water Regulations. USEPA, Office of Water. EPA-833-R-99-001, Oct. 1999.

Phase II, adopted in December 1990 and scheduled to be in full effect in March 2003, requires operators of small MS4s and small construction sites (construction activity disturbing between 1 and 5 acres of land) in urban areas to control storm water runoff discharges. Phase II establishes a cost-effective approach for reducing environmental harm caused by storm water discharges from previously unregulated diffuse sources.

A. Basis for Permit Conditions

1. **Statutory basis for permit conditions.** The conditions established by this permit are based on Section 402(p)(3)(B) of the CWA which mandates that a permit for discharges from MS4s must: effectively prohibit the discharges of non-storm water to the MS4; and require controls to reduce pollutants in discharges from MS4 to the maximum extent practicable (MEP) including best management practices, control techniques, and system, design and engineering methods, and such other provisions determined to be appropriate. MS4s are not exempted from compliance with Water Quality Standards. Section 301(b)(1)(C) of the CWA requiring that NPDES permits include limitations, including those necessary to meet water quality standards, applies. The intent of the permit conditions is to meet the statutory mandate of the CWA.

As authorized by 40 CFR 122.44(k), the permit will be utilizing BMPs, a comprehensive Storm Water Quality Management Plan (SQMP), as the mechanism to implement statutory requirements. Section 402(p)(3)(B)(iii) of the CWA clearly includes structural controls as a component of maximum extent practicable requirement.

2. **Regulatory basis for permit conditions.** As a result of the statutory requirements of the CWA the USEPA promulgated the MS4 Permit application regulations, 40 CFR 122.26(d). These regulations described in detail the permit application requirements for MS4s operators. The information in the Report of Waste Discharge (ROWD) was utilized to develop the permit conditions and determine permittees status in relationship to these conditions.
3. **Discharge limitations.** No numeric limitations are proposed at this time. In accordance with 40 CFR 122.44(k), the USEPA has required a series of increasingly more effective BMPs¹, in the form of a comprehensive SQMP, performance standards, in lieu of numeric limitations.²

B. Public Review and Participation Process

Since the Regional Board received the ROWD for Los Angeles County on January 31, 2001, Regional Board staff has dedicated significant time and effort to the public review

¹ *Interpretative Policy Memorandum on Reapplication Requirements of MS4s* issued by USEPA (61 Fed. Reg. 41697)

² *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits* (61 Fed. Reg. 43761)

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and participation process. Many meetings, workshops, and other outreach efforts were organized to ensure that the public, the Permittees, and other interested parties had ample opportunity to participate in the development and comment on draft permit requirements and language prior to the proposed adoption by the Regional Board.

To invite public comment at the beginning of the renewal process, a preliminary draft, dated March 16, 2001, was issued to a working group of interested parties. This draft was used as a starting point for discussion. Recipients had approximately 30 days to review it prior to the issuance of the first draft, on April 13, 2001. The first draft was sent to all Permittees, storm water consultants, environmental organizations, and other interested parties. It was also available on the Regional Board Storm Water web page at www.swrcb.ca.gov/rwqcb4/html/programs/Stormwater/renewal.html. Again, more than one month was provided for the submittal of written comments. The renewal schedule also included the issuance of a second draft, followed by over 30 days for review and comments, and an additional 45 days between the issuance of the final draft and the proposed permit adoption, on October 25, 2001.

Furthermore, Regional Board staff conducted separate meetings to discuss each individual Special Provision as necessary. In addition to these meetings, Regional Board staff held two workshops to review the permit and listen to comments, including one formal workshop with the Board members. Regional Board staff also participated in the monthly Executive Advisory Committee meetings to answer questions and discuss permit issues. Staff was also available for public outreach via telephone. The following table outlines the public review process.

Date	Public Involvement Activity
January 31, 2001	Application for permit renewal (ROWD)
February 27, 2001	Inspections Working Group Meeting
February 28, 2001	Illicit Connection/Discharge Working Group Meeting
March 1, 2001	Monitoring Working Group Meeting
March 12, 2001	Public Information and Participation Working Group Meeting
March 20, 2001	Inspections Working Group Meeting
March 20, 2001	Construction Working Group Meeting
March 22, 2001	Preliminary Draft Working Group Meeting
April 9, 2001	Monitoring Working Group Meeting
April 13, 2001	Issuance of First Draft
April 24, 2001	Public Workshop
April 24, 2001	Construction Meeting with Building Industry Association
April 27, 2001	Monitoring Working Group Meeting
May 9, 2001	Monitoring Working Group Meeting
May 16, 2001	First Draft Comments Due
May 24, 2001	Construction Meeting with BIA
June 4, 2001	Monitoring Working Group Meeting

Date	Public Involvement Activity
June 14, 2001	Monitoring Station Identification Field Trip
June 25, 2001	Monitoring Working Group Meeting
June 29, 2001	Issuance of Second Draft
July 26, 2001	Formal Workshop with Regional Board
September 7, 2001	Issue Final Draft
October 25, 2001	Proposed Permit Adoption at Board Meeting

IV. BACKGROUND - LOS ANGELES COUNTY MS4

A. Los Angeles County MS4 Permit History

In 1990, the Los Angeles Regional Water Quality Control Board (Regional Board) adopted Order No. 90-079, the Los Angeles County Municipal Storm Water Permit. That permit required the County of Los Angeles and the incorporated cities to implement pollution controls including amending ordinances, optimizing existing pollutant controls such as street sweeping, construction site controls, and others. The 1990 permit also required all Permittees to implement a minimum 13 BMPs for consistency across the County. The 1990 permit was issued on a system wide basis due to the highly interconnected storm drain system serving a population well in excess of 100,000 inhabitants. An NPDES permit is valid for a five-year period after the date is issued¹.

On July 15, 1996, the Regional Board adopted Order No. 96-054 that revised the 1990 permit. The 1996 permit required model programs be developed and implemented by the Permittees for Public Information and Public Participation, Industrial/Commercial Activities, Development Construction, Illicit Connections and Illicit Discharges, Public Agency Activities, and Development Planning. These dynamic model programs are modified with the changing needs of the SQMP.

Following the adoption of Order 96-054, the City of Long Beach submitted a ROWD as an application for its own MS4 permit. The City of Long Beach Municipal Storm Water Permit (Order No. 99-060) was adopted on June 30, 1999. This Order superseded the countywide permit, allowing Long Beach to operate under separate waste discharge requirements.

On January 31, 2001, the Los Angeles County Department of Public Works submitted an application for renewal of their MS4 permit in the form of an ROWD for Los Angeles County and the incorporated cities, except for the City of Long Beach. This application started the process of renewing the permit, which enters in its third cycle since the initial one was adopted in 1990.

¹ 40 CFR §122.46 (a)

B. Los Angeles County Storm Drain System

The storm drain system covered by this proposed permit for the County of Los Angeles and 83 incorporated cities drains the coastal slopes of the Transverse Mountain Ranges, and flows into the Santa Monica Bay and the Los Angeles/Long Beach Harbor. The storm drain structure consists of thousands of catch basins, thousands of miles of underground storm drains, as well as open channels, all owned and operated separately by Permittees. The length of the system, and the locations of all storm drain connections, is not known, as a comprehensive map for the storm drain system does not exist. Rough estimates, based on information from large municipalities (population > 100,000), indicates that the length exceeds 4,300 miles, as shown below.

Permittee	Area (Square Miles)	Catch Basins	Storm Drain Length	Open Channel Length
LA County		73,000	2,650 miles	450 miles
City of LA	469	30,000	1,600 miles	31 miles
El Monte	10	316	11 miles	0.4 mile
Glendale	30.6	1,100	Unknown	Unknown
Inglewood	9	1,157	12 miles	
Pasadena	26	1,050	30	
Santa Monica	8.3	850		
Torrance	20	2,000	20 miles	3 miles
TOTAL		109,473	4,323	484.4

C. Summary of Problems in the Los Angeles County Watersheds

Watersheds are geographic areas draining into a river system, ocean or other body of water through a single outlet. There are five Watershed Management Areas (WMAs) that represent the five major watersheds covered by the Los Angeles County MS4 NPDES permit. The following is a summary of some significant issues in each watershed.¹

Dominguez Channel/Los Angeles-Long Beach Harbor Watershed

Permitted discharges

- 415 dischargers covered under an industrial storm water permit
- 69 dischargers covered under a construction storm water permit

¹ *Watershed Management Initiative Chapter*. California Regional Water Quality Control Board – Los Angeles Region. Dec. 2000.

Potential sources of pollution

- Historical deposits of DDT and PCBs in sediment
- Spills from ships and industrial facilities
- Leakages contaminating groundwater
- **Urban and storm water runoff**
- Impairments: metals, PCBs, PAHs, historic pesticides, coliform, trash, and nitrogen

Los Angeles River Watershed

Permitted discharges

- 1,327 dischargers covered under an industrial storm water permit
- 147 dischargers covered under a construction storm water permit

Potential sources of pollution

- Nitrogen and coliform contributions from septic systems
- Other nonpoint sources (horse stables, golf courses)
- Leakage of MTBE from underground storage tanks
- **Urban and storm water runoff**
- Impairments: nitrogen, trash, selenium, other metals, coliform, PCBs, historic pesticides, chlorpyrifos

San Gabriel River Watershed¹

Permitted discharges

- 549 dischargers covered under an industrial storm water permit
- 175 dischargers covered under a construction storm water permit

Potential sources of pollution

- Excessive trash in recreational areas of upper watershed
- Nonpoint source loadings from nurseries and horse stables
- **Urban and storm water runoff**
- Impairments: nitrogen and effects, trash, metals, historic pesticides, coliform, chlorides, and PCBs

Santa Monica Bay Watershed

- 549 dischargers covered under an industrial storm water permit
- 175 dischargers covered under a construction storm water permit

¹ San Gabriel Watershed State of The Watershed - RWQCB - LA Region - June 2000

Potential sources of pollution

- Discharges from Ballona and Malibu Creeks contribute to impairments in the Santa Monica Bay and its beaches.
- Impairments: mercury, selenium, other metals, historical pesticides, PAHs, PCBs, nitrogen, coliform, trash, TBT, habitat alteration, exotic vegetation, and salts

Coastline

- **Acute health risk associated with swimming in runoff contaminated surfzone waters**
- Chronic risk associated with consuming seafood from areas impacted by DDT and PCB contamination
- Historic deposits of DDT and PCBs in sediment

Ballona Creek Watershed

- Trash loading from creek
- Sediment contamination by heavy metals from creek to Marina del Rey Harbor and offshore
- **Toxicity of both dry weather and storm water runoff in creek**
- High bacterial indicators at mouth of creek

Malibu Creek Watershed

- Excessive freshwater, nutrients, and coliform in lagoon; contribution from POTW and other sources
- **Urban runoff from upper watershed**
- Septic tanks in lower watershed

V. DISCUSSION OF SPECIAL PROVISIONS

A. Public Information and Participation Program (PIPP)

Legal Authority:

CWA sections 402(p)(3)(B)(ii-iii), CWC section 13377, and Federal NPDES regulations 40 CFR 122.26(d)(2)(l)(B, C, E, and F) and 40 CFR 122.26(d)(2)(iv).

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(A)(6) provides that the proposed management program include "A description of a program to reduce to the maximum extent practicable, pollutants in discharges from MS4s associated with the application of pesticides, herbicides, and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications, and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at municipal facilities."

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(6) provides that the proposed management program include "A description of education activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials."

To satisfy the Public Education and Outreach minimum control measure, the Permittees need to: (i) implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local waterbodies and the steps that can be taken to reduce storm water pollution; and (ii) determine the appropriate BMPs and measurable goals for this minimum control measure.

Background:

Implementation of a PIPP is a critical BMP and a necessary component of a storm water management program. The State Board Technical Advisory Committee "recognizes that education with an emphasis on pollution prevention is the fundamental basis for solving nonpoint source pollution problems." The USEPA Phase II Fact Sheet 2.3 (Fact Sheet 2.3) finds that "An informed and knowledgeable community is critical to the success of a storm water management program since it helps insure the following: (i) greater support for the program as the public gains a greater understanding of the reasons why it is necessary and important, and (ii) greater compliance with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters."¹

Furthermore, the public can provide valuable input and assistance to a municipal storm water management program and, therefore, should play an active role in the development and implementation of the program. An active and involved community is essential to the success of a storm water management program because it allows for:

- Broader public support since citizens who participate in the development and decision making process are partially responsible for the program and, therefore, may be less likely to raise legal challenges to the program and are more likely to take an active role in its implementation;
- Shorter implementation schedules due to fewer obstacles in the form of public and legal challenges and increased sources in the form of citizen volunteers;
- A broader base of expertise and economic benefits since the community can be a valuable, and free, intellectual resource; and
- A conduit to other programs as citizens involved in the storm water program development process provides important cross-connections and relationships with other community and government programs. This benefit is particularly valuable when trying to implement a storm water program on a watershed basis, which is encouraged by the USEPA.

Discussion:

Based on the background information, the County should continue its comprehensive educational storm water and urban runoff outreach program, which is designed to measurably increase public knowledge and change behavior regarding storm water pollution. The first five-year public education plan was

¹ Storm Water Phase II Final Rule - Public Education and Outreach Minimum Control Measure. USEPA Fact Sheet 2.3, January 2000.

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successful at studying segmentations of Los Angeles County residents to identify those who pose the greatest threat to storm water quality and those who represent the greatest opportunity to respond to a public education program, as well as providing a baseline measurement of residents' storm water-related practices and habits. This information was used to target the residents who are most likely to change their behaviors to improve storm water quality. Using various communication tactics and activities, the program successfully reached 83% of County residents with pollution prevention messages through the Storm Water/Urban Runoff Public Education Program Five-Year Storm Water Public Education Strategic Analysis (Five-Year Strategy).¹

Although the Program has been successful at certain goals it must be augmented to continue increasing public awareness of specific storm water issues. According to the USEPA, materials and activities should be relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage. This is addressed in Part P.4 of the Five-Year Strategy by requiring the development of watershed and pollutant-specific education programs.

Also, the USEPA encourages partnerships and cooperation, and quarterly meetings will provide the opportunity for Permittees to coordinate their outreach efforts and efficiently build on the County's existing program with local, watershed-specific efforts.

Furthermore, "Directing materials or outreach programs toward specific groups of commercial, industrial, and institutional entities likely to have significant storm water impacts is recommended" (Fact Sheet 2.3). The Permittee conducted educational site visits to Phase I industrial facilities, auto repair shops, retail gasoline outlets, and restaurants during the last 5-year permit cycle. The next step in this targeted outreach program is education at the corporate level to facilitate employee compliance, as described in Part P.5 of Five-Year Strategy. Also, a non-regulatory business assistance program will encourage small businesses that lack access to the expertise necessary to comply with storm water regulations to implement pollution prevention measures.

Specific significant changes in the draft permit and their justifications are described below:

1. Program for Residents

NEW REQUIREMENT: The Principal Permittee shall organize Public Outreach Strategy meetings with all Co-permittees on a quarterly basis. The Principal Permittee shall provide guidance for Co-permittees to augment the regional outreach and education program. Co-permittees shall coordinate regional and local outreach and education to reduce duplication of efforts.

JUSTIFICATION: This requirement is based on the need for coordination between all Permittees. Since the Program's inception, Permittees have

¹ Storm Water/Urban Runoff Public Education Program Five-Year Storm Water Public Education Strategic Analysis, Los Angeles County of Public Works, July 31, 2000.

been required to conduct education activities within their own jurisdictions. The lack of guidance and coordination has led to duplicate efforts and confusion about developing appropriate programs that are consistent with, and enhance, the Principal Permittee's regional education program. This requirement will ensure that all Permittees are coordinated for the most efficient and effective Program. It will also help identify Permittees with insufficient Programs.

Fact Sheet 2.3 states that it is generally more cost-effective to have numerous operators coordinate to use an existing program than all developing their own local programs. Therefore, Permittees should build on the regional program with additional information specific to local needs.

NEW REQUIREMENT: The Principal Permittee and Co-permittees shall coordinate to develop outreach programs that target the watershed-specific pollutants listed in Table 1 within 6 months of the permit adoption date. It may be appropriate to address metals in the Industrial/Commercial businesses program. Region-wide pollutants may be included in the Principal Permittee's mass media efforts.

Table 1. Target Pollutants for Outreach

Watershed	Target Pollutants for Outreach
<i>Ballona Creek</i>	<i>Trash, Indicator Bacteria, Metals, PAHs</i>
<i>Malibu Creek</i>	<i>Trash, Nutrients (Nitrogen), Indicator Bacteria</i>
<i>Los Angeles River</i>	<i>Trash, Nutrients (Nitrogen), Indicator Bacteria, Metals, Pesticides, PAHs</i>
<i>San Gabriel River</i>	<i>Trash, Nutrients (Nitrogen), Indicator Bacteria, Metals</i>
<i>Santa Clara River</i>	<i>Nutrients (Nitrogen), Indicator Bacteria</i>
<i>Dominguez Channel</i>	<i>Trash, Indicator Bacteria, PAHs</i>

JUSTIFICATION: This requirement will allow the Program and/or local efforts to focus on target pollutants. Citizens must be aware of priority pollutants and their causes for any improvement to occur. Page 3 of the SQMP states that the components within the phases that roll-out over the next four years will be fluid to reflect the evolving message for each targeted audience. This implies that the Permittee realizes the need to target pollutants and specific audiences and has already planned to address this issue. This is a necessary step in the implementation of current and future total maximum daily loads (TMDLs) requirements.

Fact Sheet 2.3 states that municipalities should strive to make their materials and activities relevant to local situations and issues, and to incorporate a variety of strategies to ensure maximum coverage. It also recommends directing materials or outreach programs toward specific groups of commercial, industrial, and institutional entities likely to have significant storm water impacts.

Although it may not be appropriate to target heavy metals through the Program for Residents, it may be accomplished through the site inspection program. The Industrial/Commercial Program will prioritize facilities by their threat to water quality and whether or not they generate

pollutants for which the water body is impaired, so it will be consistent with this requirement and Table 1.

2. Programs for Businesses

NEW REQUIREMENT: The Principal Permittee shall develop and implement a Corporate Outreach Program to educate corporate environmental managers about storm water regulations. The Program shall target retail gasoline outlets (gas stations) and restaurant chains.

JUSTIFICATION: Facility owners and representatives at the corporate level are not typically present during site visits or inspections. They need to be educated about applicable storm water regulations so they can set rules and direct management to ensure compliance at the facility level.

This has already been discussed as the next step following the last five years of outreach to these businesses.

NEW REQUIREMENT: Permittees may develop and implement a Business Assistance Program to provide technical resource assistance to small businesses to help them understand and comply with storm water regulations.

JUSTIFICATION: Many small businesses do not have the resources or expertise necessary to understand and implement storm water regulations. And hiring consultants and implementing structural BMPs can put many small operators out of business. Therefore, a non-regulatory assistance program that educates businesses about pollution prevention will help them comply, and cut costs, so they can continue to be competitive. This is encouraged, but is not a requirement.

The City of Los Angeles has been implementing a successful business outreach program through the Hazardous and Toxic Materials Office since 1988.

Fact Sheet 2.3 recommends directing materials or outreach programs toward specific groups of commercial, industrial, and institutional entities likely to have significant storm water impacts.

Alternative funding sources, such as grants and loans may be available to fund such a program.

3. Performance Standards

NEW PERFORMANCE STANDARD: The discharger shall ensure that a minimum of 35 million impressions per year are made on the general public about storm water via print, local TV access, local radio, or other appropriate media.

JUSTIFICATION: According to the Principal Permittee's Year Four (1999-2000) Highlights, approximately 85 million impressions were made

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through advertising, media relations, customized coffee jackets, corporate partnerships, special events, and business outreach. Hits on the www.888CleanLA.com website have been consistently increasing, indicating a growing public interest, as well as greater impressions. It can be anticipated that mass media coverage will become more efficient after the final Program study is complete in the summer of 2001. Also, increased media attention and public interest in current issues, such as trash TMDLs, is expected. The County originally proposed that it would make a minimum of 50 million impressions per year; however, this number has been reduced to 35 due to the increasing cost of advertising.

The requirement is consistent with the number of impressions required in the City of Long Beach Municipal Storm Water Permit Order (99-060) and the Ventura County Municipal Storm Water Permit. The City of Long Beach is required to make a minimum of 1.5 million impressions per year. With a total population of approximately 426, 000 people, they must impress each person approximately 3.5 times per year. Ventura County is also required to impress every resident approximately 3 times. The 9.5 million people in Los Angeles County¹ must be impressed approximately 3 times per year.

NEW PERFORMANCE STANDARD: The discharger shall provide all School Districts within its jurisdiction with materials, including videos, live presentations, brochures, and other media necessary to educate a minimum of 50 percent of all school children (K-12) every 2 years on storm water pollution. All Co-permittees shall cooperate with funding and implementing this requirement. Cooperative efforts with other agencies may also be used to accomplish this requirement.

JUSTIFICATION: This requirement is consistent with the City of Long Beach Municipal Storm Water Permit.

It is also justified by the performance of Los Angeles County's School Environmental Education Program. According to data provided by the County, the Program has been reaching approximately 50 percent of elementary and secondary schools in the County every 2 years. It is also expected that the required coordination among permittees will increase the effectiveness and range of this Program.

NEW PERFORMANCE STANDARD: Corporate Outreach for all gas station and restaurant chain corporations shall occur once every 2 years, not less than twice during the permit cycle.

JUSTIFICATION: This performance standard is required because it is consistent with the frequency of previous and current inspections. This program will replace the need for educational site visits or inspections of gas stations. The resources saved by not inspecting gas stations can be used to fund this program. Also, a corporation can encompass many gas stations or restaurants, so the number of consultations will be significantly less than that of previously required educational site visits.

¹ 2000 U.S. Census Bureau

B. Industrial/Commercial Facilities Program

Legal Authority:

The Phase I 40 CFR 122.26(d)(2) regulations require, in part, that the applicant (i) develop adequate legal authority, (ii) perform a source identification, and (iv) develop a management program to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system design and engineering methods, and such other provisions which are appropriate. Specifically, with regards to industrial controls, the management plan shall include the following.

40 CFR 122.26(d)(2)(iv)(C), A description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and **industrial facilities** that the municipal permit applicant determines are **contributing a substantial pollutant loading to the municipal storm sewer system**. The program shall:

- (1) *Identify priorities and procedures for **inspections** and **establishing and implementing control measures** for such discharges;*
- (2) *Describe a **monitoring program** for storm water discharges associated with industrial facilities [...]*

Background:

The municipality is ultimately responsible for discharges from their municipal storm sewer system (MS4). Because industrial awareness of the program may not be complete, there may be facilities within the MS4 area that should be permitted but are not (non-filers). In addition, the Phase I regulations that require industries to obtain permits is based on SIC Code. This has been shown to be incomprehensive in identifying industries that may be significant sources of storm water pollution (*by industries we also mean commercial businesses. "Industries" is intended as a generic term*) that should be permitted. Another concern is that the permitting authority **may not have adequate resources** to provide the **necessary oversight** of permitted facilities. Therefore, it is in the municipality's best interest to assess the specific situation and implement an industrial/commercial inspection/site visit and enforcement program to control the contribution of pollutants to and through their MS4 to the maximum extent practicable from all high risk sources.

In the preamble for its 1990 regulations, the USEPA clearly states the intended strategy for discharges of storm water associated with industrial activity: *"...Municipal operators of large and medium municipal separate storm sewer systems are responsible for obtaining system-wide or area permits for their system's discharges. These permits are expected to require that **controls** be placed on **storm water discharges associated with industrial activity** which discharge through the municipal system."* The USEPA also notes in the preamble that *"... municipalities will be required to meet the terms of their permits related to industrial dischargers."*

In the Chapter 3.0 of the USEPA's Guidance Manual¹, it is specified that municipal applicants must demonstrate that they possess adequate legal authority to:

- Control construction site and other **industrial discharges** to MS4s;
- Prohibit illicit discharges and control spills and dumping;
- Carry out **inspection, surveillance, and monitoring** procedures.¹

The document goes on to explain that "**control**", in this context means not only to require disclosure of information, but also to **limit, discourage, or terminate** a storm water discharge to the MS4. Also, to satisfy its permit conditions, a municipality **may need to impose additional requirements on discharges from permitted industrial facilities, as well as discharges from industrial facilities and construction sites not required to obtain permits.**

In the same Guidance Manual, Chapter 6.3.3, it is stated that the municipality is ultimately responsible for discharges from their MS4. Consequently, the proposed storm water management program should describe how the municipality **will help** the USEPA and authorized NPDES States to:

- **Identify** priority industries discharging to their systems;
- **Review and evaluate** storm water pollution prevention plans (SWPPPs) and other procedures that industrial facilities must develop under general or individual permits;
- **Establish and implement** BMPs to reduce pollutants from these industrial facilities (or require industry to implement them); and
- **Inspect and monitor** industrial facilities discharging storm water to the municipal systems to ensure these facilities are in compliance with their NPDES storm water permit, if required.

Discussion:

Recognizing that the municipality is ultimately responsible for the quality of storm water discharges in the MS4, the municipalities should evaluate the industrial/commercial facilities and determine their compliance with the permit requirements, as well as their contribution to the MS4 and potential impacts to the receiving waters. The following areas must be addressed in order to implement a meaningful industrial/commercial inspection/site visit and enforcement program, which has the ability to **control and reduce** the contribution of pollutants from industrial/commercial sites to the MEP.

- **Source Identification**
 - ❑ Identification of industrial/commercial sites discharging to the MS4 (by SIC codes and narrative if needed)
 - ❑ Characterization of activities, materials used, and potential for contributing pollutants along with the type of pollutants
- **Pollution Prevention**

¹ *Guidance Manual For the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems* - USEPA -November 1992

- ☐ Key concepts are many times overlooked: **Prevent, before it happens**, and be **Pro-active** rather than **Reactive**. It is more difficult to treat after the pollutant is released or mixed with runoff. BMPs and other site-specific controls are often most appropriate for reducing pollutants in storm water discharges associated with industrial activity.
- **Threat to Water Quality Prioritization**
 - ☐ Identify impaired water bodies and link with activities and industrial/commercial sites that may contribute specific pollutants creating (or potentially contributing to) the water quality impairment
- **Through existing ordinance, order, or similar means, the ability to**
 - ☐ enter premises;
 - ☐ conduct inspections;
 - ☐ review and evaluate SWPPPs;
 - ☐ require minimum BMP implementation and monitoring results review; and,
 - ☐ take appropriate enforcement procedures and actions

in order to address the following elements:

- ☐ minimum BMP Implementation
- ☐ monitoring of Industrial/Commercial sites
- ☐ inspection/site visit of Industrial/Commercial sites
- ☐ enforcement measures for Industrial/Commercial sites

It may be necessary to update existing ordinances if they do not provide sufficient legal authority to implement the above mentioned components.

Strategy and Coordination with State activities

Recognizing the dual coverage envisioned by the USEPA regulations, and suggested partnership between local and State authorities, municipalities shall coordinate with State activities for the implementation of the General Industrial Activities Storm Water Permit (GIASP) and the control of other sources not specifically covered under Phase I storm water regulations but identified as significant contributors of pollutants by the municipalities through their identification and prioritization process. The net result should be a better and improved coordinated program with greater impact on limiting and eliminating (as a final goal) the contribution of pollutants to the receiving water while maintaining and/or restore the capacity of the receiving water to sustain the beneficial uses without impairments.

During the previous permit cycle the Los Angeles County conducted a Critical Source Study (1998-2000) as required by the permit conditions. The objective of the study was to identify five priority industrial and/or commercial critical source types, and monitor each source type for two years. The *Critical Source Selection and Monitoring Report* (Woodward-Clyde, 1997) identified as the five highest ranked pollution potential activities to be, in order of ranking: (i) wholesale trade (scrap, auto dismantling), (ii) automotive repair/parking, (iii) fabricated metal products, (iv) motor freight (including trucking), (v) chemical and allied products. The report also outlined a complete study plan to be implemented by the

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Permittees during the permit cycle. It is significant to note that four out of five categories of activities are subject to Phase I storm water regulations while automotive repair/parking category was not the focus of Phase I, but the study identified this category as a significant contributor based on the criteria developed in the report.

Rank (pollution potential) ¹	Industrial Category	SIC Code	No. Facilities
1	Wholesale trade (scrap, auto dismantling)	50	587
2	Automotive repair/parking	75	6,067
3	Fabricated metal products	34	3,283
4	Motor freight (including trucking)	42	872
5	Chemical and allied products	28	1,069

Based on the dual coverage and partnership approach between permitting authority and municipalities intended by the USEPA in the storm water regulations (see letters from Alexis Strauss, USEPA Water Division Director)^{2,3}, and in order to best use limited resources at the State and Municipal level, Regional Board staff requires the following improvements:

Recognizing that this permit represents a third generation permit, and building upon the experience and tools developed under the previous permits, the Industrial/Commercial program must be elevated to an Inspection/Site visits and enforcement program, in order to have the municipalities control the storm water discharges associated with industrial activities from industrial/commercial facilities to the MEP while assisting the Regional Board to implement the general permit for industrial activities. The business PIPP component should be continued under the auspices of the Public Education program.

The strategy as outlined in the permit builds on the State/Municipalities partnership by focusing their limited resources on the following activities:

- The Permittees will take a lead role in inspecting restaurants, automotive service facilities and site visits at Phase I facilities while
- Regional Board will be the lead for facilities covered or in need of coverage under GIASP
- The Permittees will assist Regional Board in its activities to fully implement the GIASP through spot check inspections, referrals, data information search, joint inspections
- The Regional Board and Permittees will coordinate their informational systems and task scheduling to avoid duplication and strengthen harmonization of activities

C. Construction Sites Program

¹ *Critical Source Selection and Monitoring Report (Table 1-3)* - Woodward-Clyde 1996

² Letter dated December 19, 2000, from Alexis Strauss, Director, Water Division, USEPA Region IX, to Dennis Dickerson, Executive Officer, Regional Water Quality Control Board-Los Angeles Region.

³ Letter dated April 30, 2001, from Alexis Strauss, Director, Water Division, USEPA Region IX, to Honorable Stephen Horn, U.S. House of Representatives

Legal Authority:

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(D) provides that a proposed management program must include "A description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system."

In this Permit renewal, Regional Board staff have drafted language that provides more consistency among the Permittees and that distinguishes among the different types and sizes of construction activity that occur within our Region.

Background:

There are different environmental impacts of construction activity.

As stated in the *California Storm Water Best Management Practice Handbook for Construction Activity* (BMP Handbook), "Construction usually increases the amount of impervious area causing more of the rainfall to runoff, and increasing the speed at which runoff occurs. Unless properly managed, this increased runoff will erode natural and/or unprotected watercourses causing the watercourse to widen...Sedimentation can also contribute to accelerated filling of reservoirs, harbors, and drainage systems."¹

Discussion:

The prevention of erosion is a key objective to the proposed modifications to the construction program under this draft Order. The Permittees currently oversee construction sites within their respective jurisdiction. The oversight of smaller construction sites (those sites under five acres) is inconsistent among Permittees. Some Permittees have incorrectly assumed that responsibility begins only after a discharge of pollutants, sediments for example, has left the site. This was not intended in either the Phase I Federal Regulations promulgated on November 16, 1990, or in Board Order 96-054. In this permit reissuance, Regional Board staff proposes to eliminate these inconsistencies and require that the municipalities better coordinate oversight of construction activity within their jurisdiction. The Permittees are ultimately responsible for what enters and exits the portion of the storm drain system that they own and/or operate. It is in the best interest of the Permittees to become familiar with what enters their system and to control as necessary the discharges allowed into their storm drain system.

Specific significant changes in the draft permit and their justifications are described below:

NEW REQUIREMENT: Regional Board staff propose that the Permittees implement requirements for the use of effective erosion and sediment controls at construction sites regardless of size, wherever applicable.

¹ *California Storm Water Best Management Practice Handbook for Construction Activity*. 1993.

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JUSTIFICATION: The need for proper erosion and sediment controls is very apparent during, and immediately after, the rains that we experience in Southern California. The environmental effects of erosion are well documented and erosion is something that can be prevented or reduced with the proper foresight and implementation of suitable BMPs.

NEW REQUIREMENT: Requirements for structural source control and non-structural BMPs for controlling runoff at construction sites.

JUSTIFICATION: The need to properly control runoff at construction sites is great. When erosion occurs the sediments generated begin to flow down hill. With adequately engineered and implemented structural or non-structural BMPs, the detrimental environmental effects can be eliminated or minimized. Currently, there are many manuals and guidance handbooks available to lead a developer. The municipalities, in general, are aware of these BMPs, and working with Regional Board staff facilitates the requirements being quickly implemented.

NEW REQUIREMENT: Each Permittee shall require the preparation, submittal, and implementation of a Local Storm Water Pollution Prevention Plan (Local SWPPP), or compliance with a minimum set of BMPs for construction sites of less than 1 acre.

JUSTIFICATION: This requirement is intended to bring the smaller sites into environmental compliance by requiring the implementation of erosion and sediment control or pollution prevention BMPs on smaller sites that otherwise would potentially not have any requirements for pollution control. This, however, does not necessarily require that a permit be issued to the small site operator.

NEW REQUIREMENT: Each Permittee shall require the preparation, submittal, and implementation of a Local SWPPP prior to issuance of a grading permit for construction projects that meet one or more of the following criteria: will result in soil disturbance of one acre or more in size; is within, directly adjacent to, or is discharging directly to an environmentally sensitive area; or is located in a hillside area.

JUSTIFICATION: This is to ensure that a site that is being graded, but is less than the size requirements for a General Construction Activities Storm Water Permit (GCASP) have oversight by the local permitting authority. Currently, there are inconsistent requirements for grading among the Permittees and this change would bring consistency and environmental protection for smaller sites conducting grading activities.

NEW REQUIREMENT: The Permittees shall have a mechanism to review, approve, and enforce any erosion control plan submitted to the Permittee for implementation at construction sites within the legal boundary of the Permittees jurisdiction, regardless of size and regardless of whether a GCASP exists for the sites. This mechanism shall be available through the requirement of Local SWPPPs on projects within the Permittees jurisdiction of one acre or more.

JUSTIFICATION: The Permittees need to take an active role in what the operators of construction sites are doing to prevent erosion and not wait for the detrimental

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effects of a rain on a site with inadequate erosion controls and the flow of sediments off site to react with an enforcement action.

NEW REQUIREMENT: The Permittees, on those sites that need a GCASP shall not issue a grading permit until such time that the Notice of Intent (NOI) to comply with the State Permit and a copy of the SWPPP is submitted to the local authority. This also applies to property transfers between developers.

JUSTIFICATION: This is currently a requirement in Board Order No. 96-054, but not all Permittees have completely or consistently implemented this. Regional Board staff inspect construction sites covered by a GCASP. The Permittees are optimizing the implementation of the State Permit when they implement this requirement. Regional Board staff has found that on occasion, a Permittee issues a grading permit where no state permit has been obtained. State-municipal coordination reduces the amount of sites that Regional Board staff inspects for State requirements. With this requirement fully implemented, Regional Board staff believe that the number of construction sites covered by a State Permit will increase from approximately 1000 to 1500, solely as a result of consistency among the Permittees in issuing grading permits.

NEW REQUIREMENT: Wet weather inspections are required of all construction sites one acre or greater. The Permittees need to conduct wet weather inspections to ensure compliance with local ordinances.

JUSTIFICATION: If all sites are inspected, this allows the Permittees to ascertain compliance and focus educational and enforcement efforts on those that most need it. Additionally, Regional Board staff can assist the Permittees in compliance oversight by conducting joint inspections. The City of Los Angeles estimates that there will be an increase of 15,000 sites. As this is the largest Permittee it is anticipated that this new requirement will not be as burdensome on the rest of the Permittees. Nonetheless, these inspections will be essential to reducing the discharge of pollutants to waters of the United States to the maximum extent practicable.

D. Illicit Connections and Illicit Discharges Elimination Program

Legal Authority:

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(B) provides that the proposed management program “shall be based on a description of a program, including a schedule, to detect and remove (or require the discharger to the municipal storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer.”

Federal NPDES regulation 40 CFR 122.26(d)(2)(iv)(B)(1) provides that the Copermittee include in its proposed management program “a program, including inspections, to implement and enforce an ordinance, orders or similar means to prevent illicit discharges to the municipal storm sewer system.”

Background:

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During dry weather, much of the discharge to storm drain systems consists of wastes and wastewater from non-storm water sources. A significant amount of such discharges may be from illicit discharges or connections, or both. Illicit discharges may occur either through direct connections, such as deliberate or mistaken piping, or through indirect connections, such as dumping, spillage, subsurface infiltration, and washdowns.

The objective of a municipality's illicit connection/illicit discharge (IC/ID) elimination program should be to detect illicit connections and illicit discharges to the storm drain system, and to promptly eliminate such discharges and connections. Municipalities typically employ the approaches listed below to achieve this objective:

1. Mapping locations of outfalls of the MS4 and the names and locations of all waters of the U.S. that receive discharges from the outfalls.
2. Adopting a storm water/ urban runoff ordinance to prohibit unauthorized non-storm water discharges into the MS4, and implementing appropriate enforcement procedures and actions.
3. Implementing a program to detect and eliminate non-storm water discharges to the MS4, including illegal dumping.
4. Educating public employees, businesses, and the general public about the dangers associated with illegal discharges and improper disposal.
5. Establishing a public reporting hotline or other mechanism to report illicit discharges and illegal dumping.
6. Establishing measurable goals to evaluate successful program implementation.

Discussion:

Existing IC/ID Elimination Program

The Regional Board approved a model IC/ID elimination program for the Permittees' SQMP on March 23, 1999. Only vague performance standards are specified in this model program. By July 1999, all Permittees reported that they implemented this program. Permittees' estimates of fiscal resources required to implement their programs ranged widely, with two cities, Culver City and Hermosa Beach, estimating expenditures of \$4.2 million and \$2.8 million, respectively. At the other end, four cities estimated \$0 expenditures, namely La Habra Heights, Lawndale, Maywood (which does not operate a storm drain system), and West Covina. Based on the Permittees' estimates of expenditures, the Permittees expended an average of \$113,900 in 1999/00. Removing the anomalous estimates for Culver City and Hermosa Beach, the high ranges up to \$564,809, as estimated by the City of Los Angeles, and averaged \$32,500.

The Permittee's IC/ID activities are summarized in Tables 1 through 12. The reports of suspected illicit discharges and connections, as summarized in the tables, do not appear to bear a relationship with IC/ID expenditures by each Permittee.

Illicit Connections: As designed in the model program, Permittees with storm drain systems under their management rely upon field screening, during regularly scheduled maintenance of the storm drain system, to locate illicit connections. However, most Permittees cannot estimate the length of the storm drain system that was field-screened; nor did the Regional Board require reporting such information.

For the 1999/00 annual reporting period, very few Permittees reported illicit connections. The attached tables show that the numbers of illicit connections varied widely among Permittees, with about half reporting no illicit connections, and with the County reporting 877 suspected illicit connections. Part of the reason for this range is that the County is responsible for maintaining over half¹ of the storm drain system. **Also, several Permittees believe that few** – if any – illicit connections have been identified in many cities because: (a) many cities are primarily residential, and illicit connections are unlikely to occur from residential land use; and (b) cities in the County of Los Angeles are relatively new vis a vis their eastern counterparts, and adequate controls were in place at the time storm drain connections were installed.

Table 1: Illicit Connections 1999/00 -- County of Los Angeles, and Ballona Creek and Urban Santa Monica Bay Watershed Management Areas

Permittee	Number of Illicit Connections:				
	Investigated	Exempt	Discharges Terminated	Removed	Other
County of Los Angeles	877	124	0	336	417 ²
Beverly Hills	0				
Culver City	None				
El Segundo	0	0	0	0	0
Hermosa Beach	None				
Manhattan Beach	0				
Palos Verdes Estates	0	1	3	3	0
Rancho Palos Verdes	None				
Redondo Beach	0				
Rolling Hills	0	0	0	0	
Rolling Hills Estates	0				
Santa Monica	70	10	50	10	0
West Hollywood	None				
Total	947	135	53	349	417

¹ The exact length of storm drain systems operated by most cities is unknown.

² The County of Los Angeles reported under the "Other" category of illicit connections that 126 connections were already permitted but not properly identified and those 291 illicit connections are still under investigation.

Table 2: Illicit Discharges 1999/00 -- County of Los Angeles, and Ballona Creek and Urban Santa Monica Bay Watershed Management Areas

Permittee	Number of Illicit Discharges:					
	Investigated	No Evidence	Exempt	Under Different NPDES Permit	Discontinued	Source Not Determined
County of Los Angeles	788	95	15	2	411	265
Beverly Hills	700	70 ¹	35 ²	35 ²	525	35 ²
Culver City	25	0	0	0	25	0
El Segundo	10	7	1	0	2	0
Hermosa Beach	10	2	0	0	8	0
Manhattan Beach	1	0	0	0	1	0
Palos Verdes Estates	6	2	1	0	3	0
Rancho Palos Verdes	6	0	0	0	6	0
Redondo Beach	31	3	0	0	25	3
Rolling Hills	0	N/A	N/A	N/A	N/A	N/A
Rolling Hills Estates	1				1	
Santa Monica	450	5	22	5	398	20
West Hollywood	9	1	0	0	8	0
Total	2037	185	74	42	1413	323

Table 3: Illicit Connections 1999/00 -- Dominguez Channel and Los Angeles Harbor Watershed Management Areas

Permittee	Number of Illicit Connections:				
	Investigated	Exempt	Discharges	Removed	Other
Carson	8	0	0	0	0
Hawthorne	None				
Inglewood	3				3 ²
Lawndale	None				
Lomita	1	0	1	0	0
Torrance	0				
Total	12	0	1	0	3

¹ Documented as percentage.

² The City of Inglewood reports that 3 illicit connections are to be eliminated.

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Table 4: Illicit Discharges 1999/00 Dominguez Channel and Los Angeles Harbor Watershed Management Areas						
Permittee	Number of Illicit Discharges:					
	Investigated	No Evidence	Exempt	Under Different NPDES Permit	Discontinued	Source Not Determined
Carson	24	12	0	0	0	24
Hawthorne	10	0	1	0	9	0
Inglewood	3				3	
Lawndale	2	1	0	0	1	0
Lomita	14	0	0	0	14	0
Torrance	0					
Total	53	13	1	0	27	24

Table 5: Illicit Connections 1999/00 -- Los Angeles River Watershed Management Areas					
Permittee	Number of Illicit Connections:				
	Investigated	Exempt	Discharges Terminated	Removed	Other
Alhambra	0	0	0	0	0
Arcadia	0	0	0	0	0
Bell	0	N/A	N/A	N/A	N/A
Bell Garden	0	0	0	0	0
Burbank	4		3	1	
Commerce	14	8	6	0	0
Compton	8	6	2	0	0
Cudahy	0	N/A	N/A	N/A	N/A
El Monte	None				
Glendale					
Hidden Hills	0	N/A	N/A	N/A	N/A
Huntington Park	2			2	
La Canada Flintridge	0				
Los Angeles	29	7	8	11	3
Lynwood	0	0	0	0	0
Maywood	0	0			
Monrovia	0	N/A	N/A	N/A	N/A
Montebello	21	0	11	1	9
Monterey Park	2	0	0	2	0
Paramount	0				
Pasadena	None				
Rosemead	0				
San Fernando	None				
San Marino	0	N/A			
Sierra Madre	None				
Signal Hills	None				
South El Monte	None				

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South Gate	2	0	1	1	
South Pasadena					
Temple City					
Vernon	1	0	0	0	1
Total	83	21	31	18	13

Table 6: Illicit Discharges 1999/00 -- Los Angeles River Watershed Management Areas

Permittee	Number of Illicit Discharges:					
	Investigated	No Evidence	Exempt	Under Different NPDES Permit	Discontinued	Source Not Determined
Alhambra	0	0	0	0	0	0
Arcadia	11	1	0	0	10	0
Bell	0	N/A	N/A	N/A	N/A	N/A
Bell Garden	0	0	0	0	0	0
Burbank	47	2	1	0	43	1
Commerce	21	4	8	0	9	0
Compton	17	9	5	0	3	0
Cudahy	0	N/A	N/A	N/A	N/A	N/A
El Monte	50	0	0	0	48	2
Glendale	?	?	?	?	?	?
Hidden Hills	0	N/A	N/A	N/A	N/A	
Huntington Park	2				2	
La Canada Flintridge	75	15	0	0	60	0
Los Angeles	1896	227	2	5	700	962
Lynwood	0	0	0	0	0	0
Maywood	1		1			
Monrovia	0	N/A	N/A	N/A	N/A	
Montebello	13	12	11	0	0	1
Monterey Park	19	0	0	0	18	1
Paramount	0					
Pasadena	39	1	0	0	37	1
Rosemead	0					
San Fernando	12	1	0	0	11	0
San Marino	0	N/A				
Sierra Madre	3	0	0	0	3	0
Signal Hills	13	3	0	0	10	0
South El Monte	15	0	0	0	15	0
South Gate	28	3	1	0	22	2
South Pasadena						
Temple City						
Vernon	10	0	0	0	9	0

Total	2271	278	29	5	1000	970
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Table 7: Illicit Connections 1999/00
Malibu Creek and Rural Santa Monica Bay
Watershed Management Areas

Permittee	Number of Illicit Connections:				
	Investigated	Exempt	Discharges Terminated	Removed	Other
Agoura Hills	0	0	0	0	
Calabasas	2				2
Malibu	15	0	7	0	
Total	17	0	7	0	2

Table 8: Illicit Discharges 1999/00 -- Malibu Creek and Rural Santa Monica Bay
Watershed Management Areas

Permittee	Number of Illicit Discharges:					
	Investigated	No Evidence	Exempt	Under Different NPDES Permit	Discontinued	Source Not Determined
Agoura Hills	11	1	0	0	10	0
Calabasas	12	1			10	
Malibu	15	7	0	0	7	8
Total	38	9	0	0	27	8

Table 9: Illicit Connections 1999/00 -- San Gabriel River Watershed Management Areas					
Permittee	Number of Illicit Connections:				
	Investigated	Exempt	Discharged Terminated	Removed	Other
Artesia	0				
Azusa	0				
Baldwin Park	None				
Bellflower	0	0	0	0	0
Bradbury	0				
Cerritos	0	0	0	0	0
Claremont	0				
Covina	0				
Diamond Bar	0				
Duarte	3	0	1	0	2
Glendora	4	0	1	0	3
Hawaiian Garden	0				
City of Industry	None				
Irwindale	9	0	9	0	0
La Habra Heights	0				
La Mirada	1	1			
La Puente	0				
La Verne	0				
Lakewood	11	5	6	0	0
Norwalk	6	0	6	0	N/A
Pico Rivera	0				
Pomona	12	10	2	0	0
San Gabriel	2	0	0	2	0
Santa Fe Spring	0	N/A	N/A	N/A	N/A
Walnut	0				
West Covina	0				
Whittier	8	3	5	2	0
Total	56	19	30	4	5

Table 10: Illicit Discharges 1999/00 -- San Gabriel River Watershed Management Areas						
Permittee	Number of Illicit Discharges:					
	Investigated	No Evidence	Exempt	Under Different NPDES Permit	Discontinued	Source Not Determined
Artesia	10	4	0	0	4	2
Azusa	1				1	
Baldwin Park	27	5	0	0	20	2
Bellflower	8	8	0	0	0	0
Bradbury	0					
Cerritos	8	0	0	0	8	0
Claremont	4	1	0	0	3	
Covina	32	5	4	0	18	5
Diamond Bar	1					1
Duarte	3	3	0	0	0	3
Glendora	14	13	0	0	12	0
Hawaiian Garden	0					
City of Industry	None					
Irwindale	23	0	0	0	20	3
La Habra Heights	1			1		
La Mirada	16		3		13	
La Puente	1				1	
La Verne	1				1	
Lakewood	17	0	2	0	9	6
Norwalk	6	0	0	0	6	0
Pico Rivera	12	6	0	0	6	0
Pomona	78	18	8	10	16	26
San Gabriel	4	0	0	0	3	1
Santa Fe Spring	12	3	0	0	0	9
Walnut	2			1	1	0
West Covina	48	6	0	0	7	35
Whittier	32	12	18	15	17	3
Total	361	84	35	27	166	96

Illicit Discharges: As designed in the model program, Permittees eliminate illicit discharges by preventing spills and, for those that do occur, by responding promptly. To prevent spills, Permittees enacted ordinances prohibiting non-storm water runoff, and are following spill prevention guidance. To respond to discharges, Permittees implement containment and cleanup procedures, coordinate with other agencies, investigate the cause of the discharge and –when the source and responsible party is know – take enforcement action. Additionally, employee training is provided on all of the above.

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As with illicit connections, the numbers of illicit discharges varies widely for the **annual reporting period 1999/00**. The County reported a total of 788 suspected illicit discharges. Among the Cities, results at the high end include 1,876 in the City of Los Angeles, 700 in the City of Beverly Hills, and 450 in Santa Monica. At the other end of the range, many cities reported no incidents of suspected illicit discharges. Based on information provided to date, staff cannot account for this wide range. Audits of the Permittees' programs should help clarify this.

Reporting: As designed in the model program, Permittees have implemented procedures to receive reports of illicit discharge and disposal incidents, and to promptly respond and report such incidents. Most rely upon the countywide hotline system, which is maintained by the County. For hazardous substances, Permittees implement additional reporting procedures.

Proposed IC/ID Elimination Program

The Special Provisions Section of the proposed permit requires the Permittees to revise their IC/ID Elimination Program in the SQMP within 180 days of adoption. As specified in the proposed permit, the key revision to the IC/ID Elimination Program shall include a proactive screening program for illicit discharges in priority areas. As Permittees have pointed out, and as staff acknowledges, residential land uses are less likely to have illicit connections. **However, staff remains concerned that adequate controls have been in place at all times for proper connections to the storm drain system.** Staff's concern is based upon the wide range of illicit connections reported by Permittees with no apparent relation to land use, and also incidents of illicit connections reported separately to the Regional Board. Accordingly, the proposed permit specifies that the Permittees shall revise the SQMP to evaluate illicit connections, prioritize suspected problem areas, and implement a proactive field screening program for such areas (that does not rely upon screening during Permittees' regularly scheduled maintenance of the storm drain system). As set forth on page 3-3 and in **Appendix I of the Permittees'** model program, screening tools for the proactive program will include dye tests, smoke tests, and TV inspections.

E. Public Agency Activities Program

Legal Authority:

Federal NPDES regulations 40 CFR 122.26(d)(2)(iv)(A)(1,3,4,5,and 6). Each Copermittee must develop a program to reduce the discharge of pollutants to and from the MS4 to the maximum extent practicable for all urban land uses and activities, including municipal areas and activities.

Background:

Many Permittees conduct activities that ultimately result in the enhancement of the lives of the residents of the cities in which they live. Some of these activities include but are not limited to: sewage system operations; public construction activities; vehicle maintenance; material storage; street and road maintenance;

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landscaping; recreational facility management; parking facility management; public industrial activities; and many other activities. These are essential services that unfortunately have potential side effects, albeit they are preventable or treatable. The Permittees also conduct some activities that are required to have separate coverage under the **1990 storm water regulations**. These services or activities undertaken by the Permittees, or by their contractors, sometimes mirror industrial activities and construction activities that a Permittee would actually place requirements upon, if the work were undertaken by and for a private party. The changes proposed by Regional Board staff are to bring consistency to requirements in this draft permit so that the end effect is pollution prevention.

Specific significant changes in the draft permit and their justifications are described below:

NEW REQUIREMENT: In sewage system operations, the proposed change is that each Permittee will be required to implement a response plan in case of an overflow of the sewage system to the storm drain system.

JUSTIFICATION: The response plan will have different requirements dependent upon whether the Permittee neither owns nor operates or maintains the sewer system to whether the Permittee owns and operates the sewer system. Because the responsibilities are different, the expectations of the Regional Board should therefore be different and the proposed language reflects this.

NEW REQUIREMENT: In public construction activity management, the proposed changes include generally, that the requirements in the construction section of the draft permit also apply to the Permittees public construction sites.

JUSTIFICATION: This is proposed to reduce the possibility of a public construction site from becoming a source of pollutants. A public construction site should be a model of what to do efficiently and effectively.

NEW REQUIREMENT: Each Permittee with a construction site that meets the size requirements for a GCASP shall obtain a permit from the State for the construction activity. Currently the size threshold is 5 acres but will change to 1 acre on March 10, 2003. However, a municipality of less than 100,000 people need not apply for the state permit for a construction activity until March 10, 2003.

JUSTIFICATION: This change is for consistency and will assist in the tracking of construction sites operated by Permittees.

NEW REQUIREMENT: For each Permittee owned construction site, the Permittee shall inspect and replace any ineffective BMPs when found.

JUSTIFICATION: This is to ensure that a properly designed and implemented BMP is properly maintained and is in proper working order during rains.

NEW REQUIREMENT: Each Permittee will be required to design and construct public facilities using construction and post-construction BMPs consistent with the Standard Urban Storm Water Mitigation Plans (SUSMPs) required under the Construction Planning section of the draft permit.

JUSTIFICATION: This is to be consistent with private projects and their planning, design, and construction requirements.

NEW REQUIREMENT: For Permittee owned or operated vehicle maintenance, material storage areas, and corporation yards the Permittees will implement site specific SWPPPs to minimize pollutant discharges in storm water discharges. Vehicle and equipment wash areas will be required to be self contained or covered, equipped with a clarifier, or other pretreatment device, and or properly connected to the sanitary sewer. This requirement will take effect when a new facility is constructed or when an existing site is remodeled or reconstructed.

JUSTIFICATION: This is to be consistent with private projects and their planning, design, and construction requirements.

NEW REQUIREMENT: For landscape and recreational facilities the changes proposed include the handling and storage of materials under cover, or on secondary containment, and the inspection of such areas.

JUSTIFICATION: These changes are minimal, and simply reflect good house keeping practices that are easily and inexpensively made.

NEW REQUIREMENT: For storm drain operation and maintenance the changes proposed are the inspection and clean out of catch basin inlets between May 1 and September 30 of each year, and the classification of priority catch basins as those 40% or more full for additional cleaning between October 1 and April 30.

JUSTIFICATION: This is to be consistent with the Ventura County Municipal Storm Water Permit.

NEW REQUIREMENT: The Permittees shall keep records of catch basins cleaned and record overall quantity of wastes collected.

JUSTIFICATION: This change is a tool to assist the Permittees in tracking cleaning and amounts of wastes collected that can also be reported to the public and to federal and state agencies as to what was prevented from flowing to waters of the U.S.

NEW REQUIREMENT: For storm drain maintenance each Permittee must visually monitor their open channels for debris and identify and prioritize areas of illicit discharge for regular inspection and at least annually remove trash and debris from the channels. Permittees will review existing maintenance activities. After clean out, the material will be properly disposed of.

JUSTIFICATION: The annual clean out is a continuation of the 1996 Permit but the visual monitoring is a new requirement to assist the Permittees in prioritizing clean outs and mobilizing cleaning crews.

NEW REQUIREMENT: For street and road maintenance each Permittee will conduct street sweeping on curbed public streets in their permitted area at a monthly average, not less than four times per month, in areas generating high volumes of trash, and at a monthly average not less than two times per month in

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areas generating moderate volumes of trash on traffic collector streets and residential areas (except that for any Permittee within an area subject to a trash TMDL, the Permittee may implement a program which maximizes trash removal by using an effective combination of street sweeping, catch basin clean outs, installation of treatment devices, and/or implementation of any other BMPs that achieve waste load allocations).

JUSTIFICATION: The changes in frequency are to be consistent with the Ventura County Municipal Storm Water Discharge Permit. The language pertaining to complying with a TMDL Waste Load Allocation (WLA) is new and was created to provide the Permittees subject to TMDLs flexibility in complying with both the TMDL and this Order. By complying with the TMDL, the Permittee will be complying with this Order as it pertains to the listed sections only.

NEW REQUIREMENT: Permittee-owned parking lots shall be kept clear of debris and oil buildup and cleaned no less than two times per month and/or inspected no less than two times per month to determine if cleaning is necessary.

JUSTIFICATION: The proposed change is to require the inspection of the lots and to clean them when necessary. The proposed cleanup of oil spots and debris is to keep lots from becoming significant sources of pollutants.

NEW REQUIREMENT: Each Permittee shall require that sawcutting wastes be recovered and disposed of properly and that in no case shall waste be allowed to enter the storm drain.

JUSTIFICATION: Previously the requirement was that sawcutting not occur during a rain except by emergency. This requirement provides flexibility in implementation of BMPs with the ultimate result being no discharge of pollutants allowed to enter the storm drain system.

NEW REQUIREMENT: Concrete and other street and road maintenance materials and wastes shall be managed to prevent pollutant discharges

JUSTIFICATION: This requirement provides flexibility in implementation of BMPs with the ultimate result being no discharge of pollutants allowed to enter the storm drain system.

NEW REQUIREMENT: The washout of concrete trucks and chutes shall only occur in designated areas and never into storm drains, open ditches, streets, or catch basins leading to the storm drain system.

JUSTIFICATION: Regional Board staff have seen inconsistent implementation of this requirement and have revised the language to be clearer while providing flexibility in implementation of BMPs with the ultimate result being no discharge of pollutants allowed to enter the storm drain system.

F. New Development And Significant Redevelopment Program

Water Quality and Storm Water

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The water quality impacts of urbanization and urban storm water discharges have been summarized by several recent USEPA reports.¹ Urbanization causes changes in hydrology and increases pollutant loads which adversely impact water quality and impairs the beneficial uses of receiving waters. Increases in population density and imperviousness result in changes to stream hydrology including:

1. increased peak discharges compared to predevelopment levels;
2. increased volume of storm water runoff with each storm compared to pre-development levels;
3. decreased travel time to reach receiving water; increased frequency and severity of floods;
4. reduced stream flow during prolonged periods of dry weather due to reduced levels of infiltration;
5. increased runoff velocity during storms due to a combination of effects of higher discharge peaks, rapid time of concentration, and smoother hydraulic surfaces from channelization, and
6. decreased infiltration and diminished groundwater recharge.

The Los Angeles County municipal storm water management MS4 program conducts monitoring to:

1. quantify mass emissions for pollutants,
2. identify critical sources for pollutants of concern in storm water;
3. evaluate BMP effectiveness, and
4. evaluate receiving water impacts.

The monitoring indicates that instream concentrations of pathogen indicators (fecal coliform and streptococcus), heavy metals (such as Pb, Cu, Zn,) and pesticides (such as diazinon) exceed state and federal water quality criteria.² The mass emissions of pollutants to the ocean are significant from the urban Watershed Management Areas (WMAs) such as the Los Angeles River WMA, Ballona Creek WMA, and Coyote Creek WMA, with the Los Angeles River WMA providing more than seventy percent of the loadings. Critical source data for facilities (such as auto-salvage yards, primary metal facilities, and automotive repair shops) showed that total and dissolved heavy metals (Pb, Cu, Zn, and Cd), and total suspended solids (TSS) exceeded state and federal water quality criteria by as much as one hundred times. The results are consistent with a limited term study conducted by the Regional Board to characterize storm water runoff in the Los Angeles region before the issuance of MS4 permits.³ Storm water runoff data from predominant land uses showed similar patterns. Light-industrial, commercial

¹ *Storm Water Phase II Report to Congress* (USEPA 1995); Report to Congress on the Phase II Storm Water Regulations (USEPA1999); Coastal Zone Management Measures Guidance (USEPA 1992)

² *Los Angeles County 1998-1999 Storm water Monitoring Report*, Los Angeles County Department of Public Works (1999). Data summarizes results of storm water monitoring for the most recent year and the past five years.

³ *Storm Water Runoff in Los Angeles and Ventura Counties, Final Report* (1988), California Regional Water Quality Control Board, Los Angeles, SCCWRP Contribution C292. This study found the highest mean concentrations of pollutants of concern such as heavy metals in the urban watershed rivers and that they contributed significant loads to the ocean.

and transportation land uses showed the highest range of exceedances. A pesticide (diazinon) showed higher ranges from residential land use. The data for polycyclic aromatic hydrocarbons (PAHs), a known pollutant of concern in urban storm water runoff, is inconclusive but improved analytical methods may yield more definitive results next year. Receiving water impacts studies found that storm water discharges from urban watersheds exhibit toxicity that are attributable to heavy metals. Biosurveys of the sea-bottom showed bioaccumulation of toxicants. Sediment analysis showed higher concentrations of pollutants, such as Pb and PAHs, in urban watersheds rather than rural watersheds (2 to 4 times higher). In addition, toxicity of dry weather flows was observed with the cause of toxicity undetermined.¹ Previous studies have found chemical concentration of pollutants that exceed state and federal water quality criteria in storm drains flowing to the ocean,² and that there are adverse health impacts from swimming near them.³

Treatment BMP requirements on new development and redevelopment offer the most cost effective strategy to reduce pollutant loads to surface waters. Retrofit of existing development will be expensive and may be considered on a targeted basis. Studies on the economic impacts of watershed protection indicate that storm water quality management has a positive or at least neutral economic effect while greatly improving the quality of surface waters.⁴

Municipal storm water regulations at 40 CFR 122.26 require that pollutants in storm water be reduced to the MEP. The USEPA's definition is intentionally broad to provide maximum flexibility in MS4 permitting and to give municipalities the opportunity to optimize pollutant reductions on a program-to-program basis.⁵ The definition of MEP has generally been applied to mean implementation of economically achievable management practices. Because storm water runoff rates can vary from storm to storm, the statistical probabilities of rainfall or runoff events become economically significant and are central to the control of pollutants through cost effective BMPs. Further, it is recommended that storm water BMPs be designed to manage both flows and water quality for best performance.⁶ It is equally important that treatment BMPs once implemented be routinely maintained.

Financing the MS4 program offers a considerable challenge for municipalities. A proven successful financing mechanism is the establishment of a storm water utility.⁷ Utility fees, which are assessed on the property owner based on some estimate of storm water runoff generated for the site, are a predictable and

¹ *Toxicity of Dry Weather Flow from the Santa Monica Bay Watershed*, Bay, S. et al (1996), Bull. Southern California Acad. Sci. 5(1), pp. 33-45. The paper describes preliminary results on dry weather toxicity which have been confirmed by the MS4 monitoring program.

² *Chemical Contaminant Release into Santa Monica Bay, Final Report*, American Oceans Campaign, Santa Monica (1993)

³ *The Health Effects of Swimming in Ocean Water Contaminated by Storm Drain Runoff*, Haile, R.W. et al. (1999), Epidemiology 10: 355-363). The study found higher risks of respiratory and gastrointestinal symptoms from swimmers.

⁴ *The Economics of Watershed Protection*, T. Schueler (1999), Center for Watershed Protection, Endicott, MD. The article summarizes nationwide studies to support the statement that watershed planning and storm water management provides positive economic benefits.

⁵ *Storm Water Phase II Final Rule – Pre-Federal Register Version*, p 87 (USEPA 1999). See USEPA's discussion in response to challenges that the definition is sufficiently vague to be deemed adequate notice for purposes of compliance with the regulation.

⁶ *Urban Runoff Pollution – Summary Thoughts – The State of Practice Today and For the 21st Century*. Wat. Sci. Tech. 39(2) pp. 353-360. L.A. Roesner (1999)

⁷ *Preliminary Data Summary of Urban Storm Water Best Management Practices* (1999), Report No. USEPA-821-R-99-012, USEPA.. The document reviews municipal financing mechanisms and summarizes experience in the U.S. to date.

dedicated source of funds. Utility fees can also provide a mechanism to provide incentives to commercial and industrial property owners to reduce impervious surface areas. Such incentives offer flexibility to property owners to choose the better economic option – paying more fees or making improvements to reduce runoff from the site.

REVIEW OF DESIGN STANDARDS

The American Society of Civil Engineers (ASCE) and the Water Environment Federation (WEF) have recommended a numerical BMP design standard for storm water that is derived from a mathematical equation to maximize treatment of runoff volume for water quality based on rainfall/ runoff statistics and which is economically sound.¹ The maximized treatment volume is cut-off at the point of diminishing returns for rainfall/ runoff frequency. On the basis of this equation the maximized runoff volume for eighty-five percent treatment of annual runoff volumes in California can range from 0.08 to 0.86 inches depending on the imperviousness of the watershed area and the mean rainfall.²

Other methods of establishing numerical BMP design standards include: (i) Percent treatment of the annual runoff; (ii) Full treatment of runoff from rainfall event equal to or less than a predetermined size; (iii) Percent reduction in runoff based on a rainfall event of standard size.³ These numerical design standards have been applied to Development Planning in Puget Sound, WA; Alexandria, VA; Montgomery County, MD; Denver, CO; Orlando, FL; Portland, OR; and Austin, TX.

The City of Seattle requires that where new development coverage is 750 square feet or more, storm water detention be provided based on a 25 year storm return frequency, and a peak discharge rate not to exceed 0.2 cubic feet per second.⁴ Additionally, for projects that add more than 9,000 square feet in developmental coverage, the peak drainage water discharge rate is limited to 0.15 cubic feet per second per acre for a two-year storm. The City of Denver requires new residential, commercial, and industrial developments to capture and treat the 80th percentile runoff event. This capture and proper treatment is estimated to remove 80 to 90 percent of the annual TSS load which is a surrogate measure for heavy metal and petroleum hydrocarbon pollutants.⁵

Some States have established numerical standards for sizing storm water post-construction BMPs for new development and significant redevelopment. The State of Maryland has established storm water numerical criteria for water quality of 0.9 to 1 inch, and BMP design standards in a unified approach combining water quality, stream erosion potential reduction, groundwater recharge, and flood

¹ *In Urban Runoff Quality Management, WEF Manual of Practice No. 23, ASCE Manual and Report on Engineering Practice No. 87.* WEF, Alexandria, VA; ASCE, Reston, VA. 259 pp. (1998).

² *Sizing and Design Criteria for Storm Water Treatment Controls, Presentation to California Storm Water Quality Task Force,* November 13, 1998, Sacramento, CA. L.A. Roesner, Camp Dresser McKee.

³ *Sizing and Design Criteria for Storm water Quality Infrastructure, Presentation at California Regional Water Quality Control Board Workshop on Standard Urban Storm Water Mitigation Plans,* August 10, 1999, Alhambra, CA., R.A. Brashear, Camp Dresser McKee.

⁴ *City of Seattle Municipal Code, Chapter 22.802.015 – Storm water, drainage and erosion control requirements.*

⁵ *Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices, Urban Drainage and Flood Control District,* Denver, CO (1999). Manual provides detail design criteria for new development for the Denver Metropolitan area.

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control objectives.¹ The State of Florida has used numerical criteria to require treatment of storm water from new development since 1982, including BMPs sized for 80 percent reduction (95 percent for impaired waters) in annual TSS loads derived from the 90 percent (or greater for impaired waters) annual runoff treatment volume method for water quality.² The State of Washington has proposed at least six different approaches of establishing storm water numerical mitigation criteria for new development, which add 10,000 square feet of impervious surface or more for residential development, and 5,000 square feet of impervious surface or more for other types of development³. The mitigation criteria options include the 90th percentile 24-hour rainfall event and the six month 24 hour rainfall event. **The State of Maryland**

On a national level, the USEPA is planning to standardize minimum BMP design and performance criteria for post-construction BMPs under Title III of the Clean Water Act, and will likely build from the experience of effective state and local programs to establish national criteria.⁴ The USEPA, based on the National Urban Runoff Program, supports the first half-inch of rainfall as generating first flush runoff.⁵ First flush runoff is associated with the highest pollutant concentrations, and not pollutant load. The USEPA considers the first flush treatment method, the rainfall volume method, and the runoff capture volume method as common approaches for sizing of water quality BMPs.

BACKGROUND IN THE LOS ANGELES REGION

Los Angeles County and municipalities within the County (except the City of Long Beach) implement a municipal storm water program to reduce storm water and urban runoff pollution under the requirements of Board Order No. 96-054. The Los Angeles County Municipal Storm Water Permit includes requirements that SUSMPs be prepared for priority planning projects and that they include appropriate BMPs and guidelines to reduce pollutants in storm water to the MEP.⁶

On April 22, 1999, the Regional Board approved a List of BMPs for MS4 Permittees to select from and required implementation of the most effective BMPs in their Development Planning and Development Construction programs.⁷

Los Angeles County Department of Public Works (LACDPW), on behalf of the Permittees, submitted SUSMPs for the Regional Board Executive Officer on July 22, 1999, which was revised and resubmitted on August 12, 1999.

¹ *Maryland Storm Water Design Manual* - (Maryland Department of the Environment 2000).

² *Florida Development Manual: A Guide to Sound Land and Water Management* (Florida Department of Environmental Protection 19xx). The manual describes structural and non-structural construction and post construction BMPs design criteria.

³ *Storm Water Management in Washington State Volumes 1 – 5*. Public Review Draft (Washington Department of Ecology 1999). The volumes 1,3 and 5 are most relevant to new development standards and cover Hydrologic and Flow Control Designs, Minimum Technical Requirements and Treatment BMPs. **The volumes will be adopted as statewide standards in early 2000 after completion of public hearings according to the agency.**

⁴ *Storm Water Phase II Final Rule* – 64 Fed. Reg. 68759. See USEPA's discussion on construction and post-construction BMP requirements for Phase II.

⁵ *A Watershed Approach to Urban Runoff: Handbook for Decisionmakers*, Terene Institute and USEPA Region 5 (1996). See discussion on sizing rules for water quality purposes, p 36.

⁶ **The Los Angeles County Municipal Storm Water Permit (Permit Pt. 2. III.A.)**

⁷ **(Board Resolution No. 99-03).**

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The Regional Board on January 26, 2000 approved a Final SUSMP, which included requirements for the following categories. The Regional Board Executive Officer issued a Board Approved Final SUSMP on March 8, 2000, which established new development and significant redevelopment conditions for all projects in the following categories,

10 or more home subdivision;
100,000+ square-foot commercial development;
automotive repair facilities;
retail gasoline outlets;
restaurants;
parking lots more than 5,000 square feet or more than 25 parking spaces
hillside located single-family dwelling,
construction projects adjacent to, in, or discharging directly to
environmentally sensitive areas

The SUSMP included numerical design criteria for structural and treatment control BMPs.

Numerical Design Standard

Mitigate (infiltrate or treat) storm water runoff from either:

- a) each runoff event up to and including the 85th percentile 24-hour runoff event, determined as the maximized capture storm water volume for the area from the formula recommended by the WEF and ASCE study¹ or
- b) the annual runoff volume, based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in the BMP Handbook², or
- c) the volume of runoff produced from each and every storm event up to and including 0.75 inch of rainfall, prior to its discharge to a storm water conveyance system, or
- d) the volume of runoff produced from each and every storm event up to and including a historical-record based reference 24-hour rainfall criterion for "treatment" (0.75 inch average for the Los Angeles County area) that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

The Regional Board action was appealed to the State Water Resources Control Board by a coalition of cities, the Building Industry Association of Southern California (BIA), and the Western States Petroleum Association (WSPA). The

¹ In *Urban Runoff Quality Management*, WEF Manual of Practice No. 23, ASCE Manual and Report on Engineering Practice No. 87. WEF, Alexandria, VA; ASCE, Reston, VA. (1998).

² *California Storm water Best Management Practices Handbook – Industrial/ Commercial*, (1993)

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State Board issued a precedential decision¹ on the matter in Order WQ 2000-11, largely sustaining the SUSMP as approved by the Regional Board. The State Board amended the SUSMP to limit its application to discretionary projects as defined by CEQA, eliminated the category for projects in environmentally sensitive areas, and set aside the requirement for retail gasoline outlets to treat storm water until a threshold is developed in the future. In addition the State Board articulated its support for regional solutions and the mitigation banking.

The Regional Board staff proposes to modify SUSMP requirements to clarify implementation, make it consistent with recent Regional Board actions, and where appropriate cure procedural and other deficiencies identified by the State Board in its SUSMP ruling. In the revised permit, staff proposes to:

require SUSMPs for hillside developments that are 10,000 square feet or more. Hillside residential homes below the threshold would be required to incorporate BMPs to facilitate drainage and pollutant removal but would not be subject to the numerical mitigation criteria. Currently, all hillside developments regardless of size are subject to the numerical mitigation criteria.

require retail gasoline stations be subject to the numerical mitigation criteria, where they meet certain thresholds such as: (i) projected gasoline output of 25,000 gallons per month or more; (ii) four or more fueling dispensers, (iii) 24 or more dispensing meters; (iv) projected average daily traffic of 100 cars or more; and (v) 5,000 square feet or more of surface area.

amend the 100,000 square feet commercial development to include heavy industrial development. The category will be designated 'industrial/commercial'.

lower the industrial/commercial category threshold from 100,000 square feet to 1-acre (40,000 square feet) beginning March 9, 2003, to be consistent with the USEPA Phase 2 Final Rule for small construction projects.

require the application of new development requirements to all developments, both ministerial and discretionary. As presently implemented the SUSMP requirements apply to only discretionary projects as defined under the California Environmental Quality Act.

require to include as a category projects situated in, adjacent to, or discharging directly to environmentally sensitive areas where the development (a) creates 2,500 square feet or more of impervious area, or (b) alters the area of imperviousness of the site to ten or more percent of the naturally occurring condition, and (c) discharge storm water and urban runoff that is likely to impact a sensitive biological species or habitat.

include numerical mitigation criteria for flow-based structural and treatment BMPs to be consistent with recent municipal storm water permits issued by the Regional Board.² These criteria are:

¹ *State Water Board Order WQ 2000-11: SUSMP*; Memorandum from Chief Counsel to Regional Board Executive Officers, (December 26, 2000) discusses statewide policy implications of the decision.

² *Board Order No. 00-018; NPDES Permit No. CAS004002*. Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within Ventura County Flood Control District, County of Ventura, and the Cities of Ventura County

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the flow of runoff produced from a rain event equal to at least 0.2 inches per hour intensity, or
the flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for Los Angeles County
the flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above

In addition staff propose that under the New Development Requirements Permittees update CEQA Documents with immediate effect and General Plans no later than 18 months from permit adoption to address storm water considerations. Both these requirements currently exist in the permit but there is no firm deadline for complying with the requirement.

The attached technical papers provide more detail.

VI. MONITORING PROGRAM

Background:

Using data collected from a monitoring program, storm water management efforts can be prioritized, helping limited resources be most effective in improving receiving water quality. For example, a monitoring program can provide data that can allow for specific receiving waters and watersheds to be targeted for urban runoff management and education efforts based on their need. Particular pollutants and their sources can also be identified and targeted using monitoring data. In addition, monitoring data can be useful in assessing the effectiveness of an urban runoff management program. Successful efforts that have resulted in receiving water quality improvements can be analyzed for application elsewhere, while areas that need greater efforts can also be identified. In general, a comprehensive monitoring program can supply a wealth of data that can be used in a wide range of applications for improving water quality.

Storm Water Monitoring History:

In the 1994-95 storm season, the Los Angeles County Department of Public Works began monitoring storm water quality in Los Angeles County. The first two years of monitoring were conducted pursuant to the 1990 permit. Over the past five years, the Los Angeles County storm water monitoring program consisted of four main components: mass emission monitoring, land use monitoring, critical source monitoring, and a Santa Monica Bay receiving water study. The results of each objective are summarized below.

- **Mass Emission Monitoring**

Mass emissions were monitored for four major watersheds: Ballona Creek, Malibu Creek, Los Angeles River, and San Gabriel River. The County also monitored mass emissions from Coyote Creek, although it was not a requirement of Order 96-045. The mass emission monitoring successfully identified 32 pollutants of concern, including toxic levels of zinc and copper from Ballona Creek discharge, toxicity in the Los Angeles and San Gabriel Rivers, and the extent of severity of bacterial indicators in both dry and wet weather. The Los Angeles River was found to consistently contribute the most zinc, copper and suspended solids.

- **Land Use Monitoring**

The County selected eight land use types to be monitored to identify sources of pollutants in storm water monitoring. These land uses include retail/commercial, vacant, high-density single family residential, transportation, light industrial, education, multifamily residential, and mixed residential. Light industrial, transportation, and retail/commercial land uses were identified as producing the highest median concentrations for total and dissolved zinc. Light industrial and transportation displayed the highest median concentrations for total and dissolved copper, and light industrial produced the highest concentrations of suspended solids. The land use monitoring data has not provided significant information to the storm water management program. However, the required event mean concentrations were not all derived during the last five years of monitoring, so the program will be continue until it is complete.

- **Critical Source Monitoring**

Five critical sources, including industrial and commercial facilities, were monitored to evaluate the effectiveness of voluntary good housekeeping and preventative BMPs. The critical sources included in the study were motor freight, auto dealers, chemical manufacturing, machinery manufacturing, and rubber/plastics. No significant difference in storm water quality was found between critical source industries that implemented BMPs and those that did not. A significant finding was that the metal fabrication industry was identified as producing the highest median concentrations for zinc, copper, and suspended solids. Due to the inability to require or control the implementation of BMPs, this study was ineffective at evaluating BMP effectiveness.

- **Receiving Water Study**

A three-year study was conducted to assess the impacts of urban storm water runoff, specifically ecosystem health, on the receiving waters of the Santa Monica Bay. The study examined plume characteristics, water column and seafloor biology. Ballona and Malibu Creek were compared to evaluate the effects of different watershed types. The study discerned the presence of well-developed plumes containing toxic materials, identified zinc and copper as contaminants in Ballona Creek, and concluded that sediments offshore of Ballona Creek generally had higher concentrations of urban contaminants. These findings demonstrate the need for further studies.

Proposed Storm Water Monitoring Program:

The objectives of this program include, but are not limited to: 1) assessing compliance with the MS4 permit; 2) measuring and improving the effectiveness of the SQMP; 3) assessing the chemical, physical, and biological impacts of receiving waters resulting from urban runoff; 4) characterization of storm water discharges; 5) identifying sources of pollutants; and 6) assessing the overall health and evaluating long-term trends in receiving water quality.

Mass Emissions Monitoring

The Principal Permittee shall monitor mass emissions from seven stations, as opposed to four in Order 96-054. The Principal Permittee proposed to continue monitoring the

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Coyote Creek station, and new stations were required in Dominguez Channel, and the Santa Clara River.

The Dominguez Channel watershed contains the highest percentage of impervious area. The Center for Watershed Protection has linked overall watershed imperviousness to storm water quality problems.¹ Also, the Dominguez Channel Watershed is a highly industrialized area and the storm water runoff needs to be characterized to determine its contribution of pollutants in the San Pedro Bay.

A new mass emission station in the Santa Clara watershed is also required. The purpose of this station is to characterize mass emissions from Los Angeles County and to monitor the impacts from new development. Therefore, the station should be located as close to the Ventura County line as practicable. The Santa Clara watershed is currently the most natural and least impacted by development in the County. However, it is rapidly developing and contains a significant amount of proposed development. Several factors, including the natural state of the river and the lack of accessibility, have made it difficult to select a location for a sampling station. The Principal Permittee and the County are currently working together to find an appropriate location.

Method Detection Limits

For the first storm of each year, method detection limits (MDLs) lower than or equal to the minimum levels in the State Board Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2000 (SIP) shall be used. If minimum levels are not detected, the MDLs from Order 96-054 may be used. The purpose of this new requirement is to detect toxic levels of constituents. If the lower MDLs are not used, toxic levels may not be detected.

TSS Monitoring

Every storm greater than .25 inch shall be sampled and analyzed for TSS. The purpose of this requirement is to consider the high variability of storm water discharges and determine more accurate average mass emission values. The high variability of storm water makes it unlikely to characterize a storm season based on a few mass emission samples. Studies show that the median event mean concentration for storm water programs that do not sample every storm is consistently biased low, relative to the annual flow-weighted mean². To adequately characterize a storm and capture central tendencies, many storms would need to be sampled. However, this is cost-prohibitive. Therefore, the correlation between TSS and trace metals should be used. Studies have indicated that runoff contaminants tend to be highly correlated with suspended solids in large rivers and creeks throughout southern California³. TSS measurements are one-tenth the cost of trace metal analyses. However, TSS concentrations accounted for up to 95% of the variability in some trace metal concentrations in a study of the Santa Ana River (urbanized watershed in Orange County) conducted by the Southern California Coastal Water Research Project (SCCWRP)².

Water Column Toxicity Monitoring

¹ need citation for CWP

² Temporal variability patterns of stormwater concentrations in urban stormwater runoff. Leisl L. Tiefenthaler, Kenneth C. Schiff, and Molly Leecaster, Southern California Coastal Water Research Project (SCCWRP) annual Report 2000.

³ SCCWRP. 1992. Surface runoff to the Southern California Bight.

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Previous storm water quality monitoring provides justification for this requirement. Storm water samples were found to be toxic in the Los Angeles River, the San Gabriel River, Ballona Creek, and the Santa Monica Bay, demonstrating the need for continued studies and source identification.

Furthermore, previous toxicity testing was only conducted using the *Strongylocentrotus purpuratus* (sea urchin) fertilization test, a marine species. In order to assess the impacts that storm water has on the inland receiving waters before it reaches the ocean, toxicity testing must also be conducted on a fresh water organism. Therefore, all tests will be conducted using the sea urchin and the *Ceriodaphnia dubia* (water flea). Sea urchins are sensitive to metals, while the *Ceriodaphnia* is sensitive to pesticides. Both of these are known impairments in this region. Samples from the Santa Clara mass emission station only need to be analyzed for toxicity to the freshwater species, because the station is located inland. Two wet weather and two dry weather samples will be analyzed for toxicity from each mass emission station every year.

Toxicity Identification Evaluations (TIE) will be conducted when two consecutive samples show toxicity. The rationale for using two toxicity hits as a trigger is based on the toxicity guidelines and requirements for NPDES permits, developed by this Regional Board. Also, storm water discharges are highly variable and requiring a TIE whenever a single sample shows toxicity, which could be a one-time event, is not cost-effective.

Furthermore, when a toxic pollutant is identified, Toxicity Reduction Evaluations (TRE) will be conducted. The purpose of this requirement is to evaluate the extent and causes of toxicity in inland and coastal receiving waters, and to eliminate or reduce the sources of toxicity in storm water. TRE development and implementation is directly tied to the SQMP, to ensure that management actions are taken when problems are identified. The Principal Permittee expressed concern to Regional Board staff that the TRE requirement could potentially be too involved and costly to be completed with the available funds and resources during the course of the Order. To address this concern, the Regional Board clarified the TRE language. It was decided that a third party should be involved in the source analysis and BMP recommendations, and that each Permittee shall be responsible for the implementation of BMPs in their areas of jurisdiction that are causing or contributing to toxicity. The Principal Permittee is responsible for conducting an analysis of possible sources of toxicity and the identification of appropriate BMPs, based on available information. Regional Board staff also agreed with the Principal Permittee's proposed funding limit for this requirement, to ensure that the majority of the monitoring budget is not used.

Overall, the toxicity monitoring program will assess the impact of storm water on the overall quality of aquatic systems and implement measures to ensure that those impacts are eliminated or reduced. Chemical monitoring does not necessarily reveal the impacts of storm water on aquatic life or beneficial uses of water bodies. Therefore, toxicity monitoring is a necessary component of a storm water monitoring program.

Tributary/Source Identification Monitoring

Based on the results of previous storm water quality monitoring and toxicity testing, there is a need to monitor subwatersheds to determine pollutant sources, prioritize management actions, and provide information for TMDL development and implementation. Regional Board staff worked with Los Angeles County staff to design a tributary monitoring program.

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Due to the great number of tributaries and limited resources for monitoring, the goals of the tributary monitoring program were prioritized. Regional Board staff decided to focus on metals in the Los Angeles River, San Gabriel River, and Ballona Creek because of existing data and the TMDL schedule¹. Staff requested that the Principal Permittee conduct an analysis of the last four years of data for land use type, area, and rainfall to determine the major tributaries with the highest loads of metals per acre. Based on the analysis, Regional Board staff selected the following tributaries to be monitored:

- Centinela Creek (Ballona Creek WMA)
- Kenter Canyon (Ballona Creek WMA)
- Aliso Creek (Los Angeles River WMA)
- Bull Creek (Los Angeles River WMA)
- Compton Creek (Los Angeles River WMA)
- Los Cerritos Channel (San Gabriel River WMA)
- San Jose Creek (San Gabriel River WMA)

The data from the tributary monitoring program will also be used to validate the Land Use Model that the County has been developing.

Shoreline Monitoring

The City of Los Angeles has conducted shoreline and nearshore water quality monitoring off the Santa Monica Bay since the 1950s under the monitoring program for the Hyperion Waste Water Treatment Plant (NPDES No. CA0109991). The monitoring results indicate that effluent from Hyperion's 5-Mile Outfall does not impinge the shoreline, and that elevated bacterial counts are associated with runoff from storm drains and discharges from piers. In 1994, the Regional Board approved the relocation of Hyperion's shoreline stations to implement a bay-wide, regional shoreline monitoring program associated with storm drain outfalls in the Santa Monica Bay. The City of Los Angeles requested that the shoreline monitoring requirement be incorporated in this Order. Regional Board staff and the County of Los Angeles determined that the shoreline monitoring is an appropriate requirement for the storm water monitoring program, per the conditions listed in Section D of the draft Monitoring Program.

Trash Monitoring

Trash is a storm water pollutant, and a monitoring program should be developed. The language in the draft is general so that details of the monitoring program can be determined through the TMDL process. A specific trash monitoring program will be required through a 13267² letter related to the TMDL. The Regional Board does not intend to require two separate monitoring programs through the MS4 permit and the TMDL.

Regional Monitoring

Regional Monitoring efforts address public health concerns, monitor trends in natural resources and nearshore habitats, and assess regional impacts from all pollutant sources. Los Angeles County is a major discharger in this region and should participate

¹ Current TMDL schedule can be found on the Regional Board website at www.swrcb.ca.gov/rwqcb4/docs/table7_wmi_appdx.pdf

² Section 13267 of the Porter-Cologne Water Quality Act

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in regional programs. Also, participation in Regional Monitoring, such as the SCCWRP Bight-wide study in 2003, can accomplish several goals of the Monitoring Program.

Estuary Sampling

The main goal of the estuary sampling is to determine the spatial extent of sediment fate from storm water, and the magnitude of its effects. From this information, a map of each estuary that depicts the impacted areas will be produced. Such a map will be used to direct future monitoring efforts. Once the impacted areas are identified, regular monitoring can be conducted to determine trends and accumulation of sediment from storm water. The specific sampling requirements are consistent with the Hyperion Waste Water Treatment Plant NPDES permit. This sampling program is also consistent with the objectives of the SCCWRP Bight-wide 2003 study. The results will be incorporated into a larger study of the entire coast of Southern California, from Santa Barbara to the boarder of Mexico. This will also provide a comparison of the storm water impacts from Los Angeles County to other larger MS4s.

Bioassessment

Bioassessment data can be an important indicator of stream health and storm water impacts. It can detect impacts that chemical and physical monitoring cannot. In the Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems, EPA encourages permitting authorities to consider requiring biological monitoring methods to fully characterize the nature and extent of storm water problems. Therefore, this Regional Board and other Regional Boards commonly require bioassessment monitoring in storm water and point source NPDES permits.

However, the fact that a biological index does not yet exist for this region is an issue that Regional Board staff took into consideration for this requirement. Without a biological index, including reference conditions and knowledge of background variability, data cannot be fully analyzed to accurately indicate stream health or impacts. However, it can be used to determine trends in the biological community, and it is necessary for index development. Also, bioassessment data can be analyzed in the future, after an index is developed.

Considering the importance of bioassessment and the need for an index, the Principal Permittee is required to develop a bioassessment program as part of a regional effort (Southern California Stormwater Research/Monitoring Program) and to coordinate with the Surface Water Ambient Monitoring Program (SWAMP), organized by the Regional Board. This is to ensure that the most useful data is collected for the purposes of detecting biological trends in receiving waters and for developing a biological index.

New Development Impact Study in the Santa Clara Watershed

The Santa Clara River is the largest river system in southern California that remains in a relatively natural state. For much of its length, it is a high quality natural resource¹. There is also a great amount of current and future development in the watershed. Therefore, it is important to monitor this watershed to detect water quality impacts from new development and implement measures to prevent degradation from occurring. To

¹ Watershed Management Initiative Chapter, January 2000. California Regional Water Quality Control Board, Los Angeles Region

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accomplish this, a special study in addition to the two mass emission stations is appropriate.

The special study will consist of monitoring tributaries in the Santa Clara watershed to accomplish two goals. The first is to determine impacts from new development. The second is to assess the effectiveness of SUSMPs by comparing storm water quality between subwatersheds with and without post-construction storm water BMPs. Two tributary stations will be selected and monitored for this study. One will be chosen that is representative of a subwatershed in which the majority of development has occurred without SUSMP implementation. The second station will be representative of a subwatershed in which the majority of development has/will include SUSMP implementation.

Due to the similarities in sites to be monitored, it may be appropriate to combine this study with the Peak Discharge Impact Study.

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Peak Discharge Impact Study

The Development Planning section (Part 4.C.2) of the draft permit requires that the Principal Permittee determine numeric criteria to prevent or minimize erosion of natural stream channels and banks caused by urbanization. The purpose of the Peak Discharge Impact Study is to help meet that requirement. The Ventura County MS4 permit contains a similar requirement. The Ventura County Flood Control District has designed a study that can be extended to a watershed in Los Angeles County.

BMP Effectiveness Study

The BMP Effectiveness Study is an integral part of the storm water monitoring program. It is necessary to determine the reduction of pollutants from different BMPs so that the storm water management agency can make educated determinations about appropriate locations and types of BMPs.